

Application No. 09/266,202

In Eiselstein v. Frank, an interference case, the court found that disclosure of 45% to 55% supported a later claim to about 45% to about 55% since the original expression would be read by a person of ordinary skill to be an approximate amount. 34 USPQ2d 1467, 1471 (Fed. Cir. 1995). "Whatever the term 'about' means in this context, it is clear that it does not extend 55% to encompass 60%." Id. In the present context, a similar conclusion would be reached.

The Iga patent at column 10, lines 14-35 discloses a mixed oxide powder including zinc oxide with an average particle size down to 50 nm (0.05 microns). Applicants' claim indicates an average particle size less than about 45 nm. In this context, the "about" clearly relates to uncertainties in measuring nanoscale particle sizes. Certainly, the "about" is not expected to relate to uncertainty of 5 nm, which is more than 10 percent of the limiting value. Based on Fig. 17 in the specification, it is clear that the diameter of particles could be determined at least to 1-2 nm. Since "about" is clearly referring to variation in diameter significantly less than 5 nm, the Iga patent does not anticipate Applicants' claim. Thus, Applicants respectfully request withdrawal of the rejection of claim 2 under 35 U.S.C. § 102(b) as being anticipated by the Iga patent.

Rejection Over Bhargava and Jaskie

The Examiner rejected claims 1-5 and 25-26 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,455,489 to Bhargava (the Bhargava patent) in view of U.S. Patent 5,442,254 to Jaskie (the Jaskie patent). Applicants incorporate by reference their arguments relating to this rejection in their Appeal Brief of August 16, 2002. Applicants respectfully request reconsideration of the rejection based on the following comments and Applicants earlier incorporated arguments.

Application No. 09/266,202

Applicants note that PTO Board of Patent Appeal and Interferences decision for the parent patent application has shed some additional light on the issues relating to this rejection. In particular, the Board decision pointed out that the Jaskie patent disclosed a micelle synthesis approach to the formation of nanocrystals in addition to the wet filtration approach. As a general proposition, references to nanocrystals refers to crystallites within polycrystalline particles, such that the nanocrystal size does not reflect the particle size. However, in the present context that is not quite true. With respect to the wet filtration technique, Applicants fully maintain their position that they have shown by a preponderance of the evidence that the wet filtration technique is not enabled by the Jaskie patent such that a person of ordinary skill in the art would be able to practice the technique without undue experimentation with a reasonable expectation of success.

Under conventional usage, nanocrystals generally refers to crystallites within polycrystalline particles. Thus, the size and size distribution of the crystallites does not directly reflect the particles size and size distribution. For example, as described at page 41, lines 11-13 of WO 98/37165 (of record in the present case), the average crystallite size is preferably at least about 40 percent of the average particle size in the embodiments described therein. In some circumstances, the average crystallite size is evaluated from measurements of the broadening of the x-ray diffractogram peaks, and no information may be provided on the average particle size.

Applicants previously realized the presence in the Jaskie patent of the language on the micelle techniques referenced by the Board. Since nanocrystal properties do not generally reflect the size of the physical particles, Applicants assumed that the particle properties of the CdS nanocrystals did not reflect the particle properties, based on standard usage of the nanocrystal terminology. In view of the Board's decision, Applicants examined the Goldstein et al. publication in the Mat. Res. Soc. Symp. Proc. of 1991. It was not immediately clear from the paper how the particle size and size distribution are related to the crystallite size and distribution.

Application No. 09/266,202

The Board further included with their Decision, a publication by Steigerwald et al. which was also not clear about the relationship of the particle size with the crystallite size.

On further examination, Applicants found a reference to Murray et al. that clearly describes unaggregated nanocrystals when formed by the micelle approach. This reference is attached for review by the Examiner to further elucidate the disclosure in the Jaskie patent. Applicants have also attached another review from 2001 for reference by the Examiner. The particles in the Murray et al. reference are limited to sulfides, selenides and tellurides with an average particle size up to about 12 nm (120 angstroms). Thus, Applicants' present claims directed to zinc oxides are distinct from these materials.

Since the micelle technique was not demonstrated for producing zinc oxides with the claimed properties and since the wet filtration techniques are not effective, the Jaskie patent does not teach or suggest producing particles with the properties of Applicants' claimed invention. Therefore, the combined disclosures of the Jaskie patent and the Bhargava patent do not render Applicants' claimed invention obvious. Applicants respectfully request withdrawal of the rejection of claims 1-5 and 25-26 under 35 U.S.C. § 103(a) as being unpatentable over the Bhargava patent in view the Jaskie patent.

Rejection Over Iga et al. and Jaskie

The Examiner rejected claims 1, 7-9 and 27-30 under 35 U.S.C. § 103(a) as being unpatentable over the Iga patent in view of the Jaskie patent. The Examiner asserted that the Iga patent disclosed the invention except for the claimed particle size distribution. The Examiner cited the Jaskie patent for the disclosure of particles with the claimed particle size distribution. Applicants incorporate by reference their arguments from their Appeal Brief of August 16, 2002. Also, as described in detail above, Applicants maintain that the Jaskie patent does not teach the formation of zinc oxide particles with the claimed particle size distribution. Since the Jaskie

Application No. 09/266,202

patent does not teach the formation of zinc oxide particles with the claimed particle size distribution, the combined disclosures of the Iga and Jaskie patents do not render Applicants' claimed invention obvious. Applicants respectfully request withdrawal of the rejection of claims 1, 7-9 and 27-30 under 35 U.S.C. § 103(a) as being unpatentable over the Iga patent in view of the Jaskie patent.

CONCLUSIONS

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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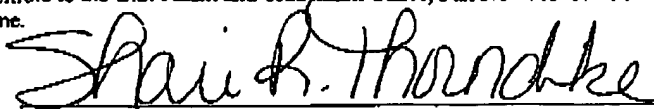
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I hereby certify that this paper is being transmitted by facsimile to the U.S. Patent and Trademark Office, Fax No. 703-872-9318 on the date shown below thereby constituting filing of same.

June 13, 2003
Date


Shari R. Thorndike

Application No. 09/266,202

ATTACHMENT
REDLINED AMENDMENTClaims As Amended

Please add new claims 36-40 as follows:

- 36. (New) The collection of particles of claim 2 wherein the collection of particles have an average diameter from about 5 nm to about 25 nm.
37. (New) The collection of particles of claim 2 wherein at least 95 percent of the particles have ratios of the dimension along the major axis to the dimension along the minor axis less than about 2.
38. (New) The collection of particles of claim 2 wherein the zinc oxide has a stoichiometry of ZnO.
39. (New) The collection of particles of claim 2 wherein the zinc oxide has a stoichiometry of ZnO₂.
40. (New) The collection of particles of claim 2 wherein the zinc oxide has a Zincite crystal structure.--